

Press Information

Kioxia, AIO Core and Kyocera announce the development of PCIe® 5.0-compatible broadband optical SSD for next-generation green data centers

Kyoto/London, 14th May 2025. Kioxia Corporation, AIO Core Co., Ltd. and Kyocera Corporation developed a prototype of a PCIe®¹ 5.0-compatible broadband SSD with an optical interface (broadband optical SSD). The three companies will develop technologies for broadband optical SSDs to enhance their suitability for advanced applications that require high-speed transfer of large data, such as generative AI, and will also apply them to proof-of-concept (PoC) tests for future social implementation.

The new prototype achieved functional operation with the high-speed PCIe 5.0 interface, which is twice the bandwidth of the previous PCIe 4.0 generation², through the combination of AIO Core's IOCore® optical transceiver and Kyocera's OPTINITY®³ optoelectronic integration module technologies.

In next-generation green data centers, by replacing the electrical wiring interface with optical and utilizing broadband optical SSD technology significantly increases the physical distance between the compute and storage devices, while maintaining energy efficiency and high signal quality. It also contributes to the flexibility and efficiency of data center system design, where digital diversification and the evolution of generative AI require complex, high-volume, high-speed data processing.

This achievement is the result of the Japanese "Next Generation Green Data Center Technology Development" project (JPNP21029). It is subsidized by the New Energy and Industrial Technology Development Organization (NEDO), which is under the "Green Innovation Fund Project: Construction of Next Generation Digital Infrastructure." In this project, companies will develop next-generation technologies with the goal of achieving more than 40% energy savings compared to current data centers. As part of this project, Kioxia is developing broadband optical SSDs, AIO Core is developing optoelectronic fusion devices and Kyocera is developing optoelectronic device packages.

¹ PCIe is a registered trademark of PCI-SIG.

² Compared to Kioxia's broadband optical SSD announced on August 7, 2024.

³ OPTINITY is a registered trademark of Kyocera Corporation.

About Kioxia Corporation

Kioxia is a world leader in memory solutions, dedicated to the development, production and sale of flash memory and solid-state drives (SSDs). In April 2017, its predecessor Toshiba Memory was spun off from Toshiba Corporation, the company that invented NAND flash memory in 1987. Kioxia is committed to uplifting the world with “memory” by offering products, services and systems that create choice for customers and memory-based value for society. Kioxia's innovative 3D flash memory technology, BiCS FLASH™, is shaping the future of storage in high-density applications, including advanced smartphones, PCs, automotive systems, data centers and generative AI systems.

About AIO Core Co., Ltd.

AIO Core Co., Ltd. (<https://www.aiocore.com/>) was established in 2017 as a spin-off from the Photonics Electronics Technology Research Association (PETRA), a technical research association supervised by Japan's Ministry of Economy, Trade and Industry (METI).

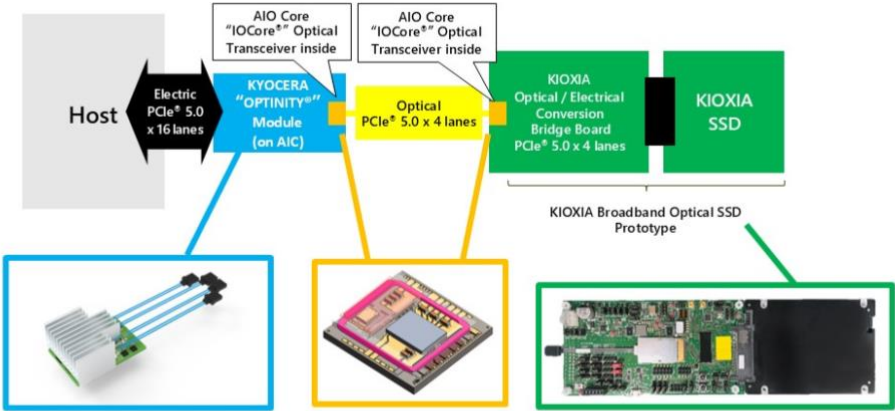
AIO Core is a startup company that develops, manufactures, and markets high-speed optical transceivers under the brand name “IOCore”⁴, utilizing silicon photonics and quantum dot laser technologies.

The “IOCore” modules enable compact, low-power, and high-temperature-tolerant optical signal transmission through optical-electrical conversion, offering high reliability in demanding environments such as medical devices, automotive systems, semiconductor manufacturing equipment, and aerospace applications.



PCIe® 5.0-compatible broadband optical SSD

⁴ IOCore is a registered trademark of AIO Core Co., Ltd. Other company names, product names and service names may be trademarks of third-party companies.



PCIe® 5.0 Verification system image



For more information on Kyocera: uk.kyocera.com

About Kyocera

Kyocera has been successful in Europe for over 50 years. From its European headquarters in Esslingen am Neckar, KYOCERA Europe GmbH operates 28 sites including manufacturing facilities, with products ranging from fine ceramics, electronics, automotive, semiconductor and optical components to industrial tools, LCDs, touch solutions, industrial printing components, solar systems and consumer goods such as kitchen and office products.

KYOCERA Europe GmbH is a company of the KYOCERA Corporation headquartered in Kyoto/Japan, a world leader in semiconductor, industrial and automotive components as well as electronic components, printing and multifunction systems, and communications technology. The technology group is one of the world's most experienced manufacturers of smart energy systems, with more than 45 years of industry expertise. The Kyocera Group comprises 292 subsidiaries (31 March 2024). In England, Kyocera has a subsidiary in Frimley, KYOCERA Fineceramics Ltd. With around 79,200 employees, Kyocera generated net annual sales of around EUR 12.29 billion in the 2023/2024 fiscal year.

Kyocera is ranked 874 on Forbes magazine's 'Global 2000' list for 2024, and ranked as 'The 100 Most Sustainably Managed Companies in the World' according to the Wall Street Journal. For the second year in a row, Kyocera qualified for the Dow Jones Sustainability Index (Asia-Pacific). As well, Kyocera receives a Bronze rating on EcoVadis Sustainability Survey and was acknowledged as a 'Top 100 Global Innovator 2025' for the ninth time by Clarivate, being one of the world's leading innovators.

Kyocera also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (equivalent to approximately €596,500 per prize category).

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